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TOKIN GETS STALIN PRIZE
FOR WORK ON PHYTONCIDES

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Prof. B. P. Tokin, who is well known as a Darwinist of the Michurin school, has received the Stalin Prize for outstanding work in the field of phytoncides. He discovered that plants produce volatile substances which have bactericidal, protistocidal, and fungicidal properties, and he named substances of this type phytoncides. He also called attention to the fact that nonvolatile substances which are lethal to microorganisms are contained in the tissue juices of higher plants. Extensive material on the subject is presented in Professor Tokin's monograph, *Phytoncides*.

It is common knowledge at this stage that garlic, onion, horse radish, the common radish, and mustard are rich in phytoncides. All plants contain phytoncides, beginning with bacteria and ending with the highest flowering plants. This is a part of the defensive mechanism of plants and of their natural immunity acquired in the course of the evolutionary process. The presence of penicillin in a certain type of plant is only an individual instance of the general occurrence of protective substances throughout the plant kingdom.

Professor Tokin listed data on the protistocidal properties of 400 species of higher plants. Volatile substances emitted by triturated garlic and onion, crushed leaves of black currant, orange, tangerine, lemon, birch, poplar, oak, walnut, bird cherry, laurel cherry, and other plants kill within a few minutes protozoa which are either pathogenic or nonpathogenic to humans. Tokin investigated the mechanism of decay of unicellular organisms of this type which occurs under the action of phytocides. He observed granular decay, fixation of the structure, or lysis. In the case of the simplest unicellular plants, lysis occurs within a few seconds.

- 1 -

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The bactericidal properties of phytoncides are especially interesting. Thus, phytoncides from the roots of the plant "krovokhlebka," which are absolutely harmless to humans, kill dysentery bacilli, bacilli of typhoid fever, and Bacilli paratyphosus A and B. Excellent bactericidal properties are exhibited by phytoncides of citrus plants and conifers.

According to data of Tokin and Yanovich, phytoncides of garlic kill within minutes, or even seconds, gram positive as well as gram negative bacteria, both aerobic and anaerobic: diptheria bacilli, cholera spirilla, perfringens, staphylococci, streptococci, representatives of the typhc-dysenteric group of microbes, tuberculosis bacilli, the microorganism producing tularemia, and others.

The volatile fractions of various plant phytocides kill the eggs of mollusks. Volatile phytoncides of bird cherry leaves kill mosquitoes, midges, horseflies, and houseflies in a few minutes.

During World War II, surgeons used phytoncides for the treatment of infected wounds. This work was done under the direction of Professor Tokin, who also introduced the application of phytoncides for the treatment of tri-chomatous [scalp?] infections at clinics of the Leningrad Medical Institute.

Tomsk scientists have published successful results in connection with the application of phytoncides for the treatment of dysentery, and similar work has been reported in the field of otolaryngology.

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- 2 -

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